IBM BlueMix Workshop

Lab D – Build Android Application using Mobile Cloud Boiler Plate

IBM EcoSystem Development Team
Build an Android Application using Mobile Cloud Boiler Plate

Learn how to create an Android application that runs on IBM BlueMix and makes use of BlueMix services such as MAS (Mobile Application Management Service), Mobile Data Service and Push Notifications. Your application is bound to these three services when you create an application using the Mobile Cloud Boilerplate.

We are going to run bluelist-android-mobiledata sample application on an Android emulator. This sample application allows users to create a shopping list that offers persistence using Cloud Storage. Users can add, edit and delete items from the shopping list. It is built using Node.js runtime. The same sample can be run on an iOS device using iOS SDK.

We will use Eclipse with ADT plugin, pull in the bluelist-android-mobiledata sample code from GitHub, make some changes and deploy the application on BlueMix. If you are using a Mac, you can start with Xcode.
Give a name to your application, the same name is used to host the mobile application on the Cloud. If you like, you can give a different name for hosting the application.

Click on the application to see a detailed view as shown below
The application is in good health, click on View Guide to get the next steps for running your mobile application on the Cloud.

Open Getting Started Guide

Congratulations on your new Mobile Cloud application!

To use the Mobile Cloud application template as a starting point, download the starter application package.

If you already have Xcode or Eclipse with ADT, get started with these simple steps:

1. Download the SDKs
2. Download a sample
3. Use the Application ID in your initializeSDK(<applicationID>) call,
   
   `12d76cc8-7694-423b-82e7-ff450b8f078b`

4. Use the Host Name
   
   `MobileCloudPoC.ng.bluemix.net`

   when initializing Cloud Code on the client.
5. Run the app in your mobile emulator

   Open docs

6:20 PM
You can install Eclipse with ADT plugin from this location:

• Unpack the ZIP file (named adt-bundle-<os_platform>.zip) and save it to an appropriate location
• Open the adt-bundle-<os_platform>/eclipse/ directory and launch eclipse.
• IDE is already loaded with Android Developer Tools plugin, Android SDK Manager and Android Virtual Device Manager

Click on the SDK link in the Getting Started Guide and download Android SDK.

Download SDKs

Building a mobile application

BlueMix supports IBM’s MobileFirst strategy by allowing you as a mobile developer to quickly incorporate pre-built, managed, and scalable cloud services into your mobile applications without relying on IT involvement. You can focus on building your mobile applications rather than the complexities of managing the back end infrastructure.

When you create a Mobile Cloud application, BlueMix provisions multiple services under a single application context. Your mobile application is given access to mobile services: Mobile Application Security, Push, and Mobile Data. A Node.js application is also provisioned so that you can provide server-side functions, such as resource URIs and static files.

The Mobile Cloud Services are integrated. You can access the services with the common Mobile Cloud Services SDK. This SDK is provided for iOS and Android devices. Each Mobile Cloud application has a unique application ID. This ID can be used by the mobile application with the SDK to access the services that are associated with that application. The application ID is used by the platform as the context for common functions, such as metering and logging.
Next, download the sample, bluelist-android-mobiledata

**Import the sample into Eclipse**

You will need to import the project into Eclipse.

1. Open Eclipse
2. Select File->Import
3. Under the header labeled "General", click "Existing Projects Into Workspace" and click Next
4. Click "Browse" next to the first text field, and navigate to the location where you exported the application repository

5. Under Projects you should now see a project called "bluelist-android-mobiledata", make sure the checkbox next to the "bluelist-android-mobiledata" project is checked and then click Finish
6. You should now see the "bluelist-android-mobiledata" project in your list of projects in Eclipse.
Click Finish.

Eclipse bundled with ADT, Android SDK Manager, AVD (Android Virtual Device) Manager, the sample bluelist-android-mobiledata project is shown below.
Create a folder `libs`, and copy all the jars from the downloaded Android SDK to `libs` folder in `bluelist-android-mobiledata` project. Refresh the project, the errors will be resolved after adding these jars.
Add the application id from the MobileCloud POC application running in Bluemix to bluelist.properties under assets folder in Eclipse.

Before you can run the bluelist-android-mobiledata application as an Android Application, please define a device using the Android Virtual Device Manager.

You can choose a name for your device, I have defined this sample device:
Running the application as an android app, starts the emulator as shown below.
Scroll the lock on the emulator to the right, Click on the icon showing tiny squares for Apps at the bottom of the screen. The running apps on the Android Emulator include Bluelist.
Clicking on Bluelist App, takes you to the following display. You can create a running grocery list by entering grocery items and clicking the plus symbol. You can delete items from the list, by pressing on the item till the icons for editing (pencil symbol) and deleting (trash can) appear at the top.
Using the Mobile Boilerplate, will bind three services with the mobile application:

1) MAS : Mobile Application Security
2) Mobile Data Service : Enables cloud storage
3) Push Notification : Enables notifications to be pushed out to the device asynchronously

Let us learn more about MAS and enable it for bluelist-android-mobiledata application:

The Mobile Application Security service (MAS) centrally manages application access for the Mobile Cloud services.

**Client list**

You can define specific list of client applications on which the MAS service operates, or you can allow all client applications to access the backend services. The MAS service is required for applications that use the Mobile Data service and Push service. It is included automatically when you create an application with the Mobile Cloud.

**Analytics**

MAS tracks several events to provide insight to application usage. For more information, click the Analytics tab.

**Totals**

The number of unique devices that were validated by this service in the last 30 days.

**OS Distribution**

A breakdown of the validations, based on the type of the user device.

**Time Graph**

A line graph that displays the occurrence of validations over time. A separate line is presented for each device type.
Configuring the Mobile Application Security service client list

By default, the client list is not enabled and all client applications can use the MAS services. To configure the MAS client list to restrict access, click the application that you created in the BlueMix dashboard. Then, click the Mobile Application Security service instance within the application.

By default, all client applications can access the application backend services. However, you can control access by defining a specific list of client applications upon which the MAS service can operate. The services that are in the Mobile Cloud boilerplate have built-in support for client lists. You can enable or disable the entire client list. When you want to temporarily disable the client list, the list is saved so that you do not need to clear the entire list of enabled clients.

- Enable the client list.
  
  When the ON OFF switch is ON, the client list is enabled and only the client applications that are listed can access the application backend services. When the switch is OFF, all client applications can access the backend applications, regardless of what is defined in the client list.

- Update the client list.
  1. Click ADD CLIENT.
  2. Select the client platform type and provide the corresponding identification.

<table>
<thead>
<tr>
<th>Platform type</th>
<th>Identification</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Android</td>
<td>Package name</td>
<td>com.example.mypackage</td>
</tr>
<tr>
<td>iOS</td>
<td>Bundle ID</td>
<td>com.example.myapp</td>
</tr>
</tbody>
</table>

4. Click OK. The client is listed in the client platform list.

- Remove a client from the client list.
When a client is removed from the client list for an application and the client list enabled switch is set to ON, that application can no longer run on that client platform. To remove a client from the client list for an application, click the delete icon ( )

Now click on MAS (Mobile Application Security) service in MobileCloudPOC application and enable it using the toggle ON/OFF switch as shown below.

By default, the application bound to the MAS Service is allowed access.

Next click on Add Client, you can enter Additional Client IDs to give access to use this MAS Service.
Prerequisites for using JazzHub to edit mobile application

If you don’t already have a JazzHub account, it is simple to register for one:

1. Go to jazz.hub.net and click Register
2. Submit registration with an IBM ID

Export the code from JazzHub

1. In JazzHub, select “Explore” and use the search option to locate the application (use “bluelist-android-mobiledata” for search term):
2. Click thru on the entry for “calosarranz | bluelist-android-mobiledata”

3. Select “Edit code” and then File > Export > Zip
Save the exported zip file and unzip contents. From this point, you can follow steps under “Import sample into Eclipse” onwards.